Title: **Retinal fundus images for glaucoma analysis: the RIGA dataset**

Introduction: Glaucoma is a major cause of irreversible blindness worldwide. Current models of chronic care will not be able to close the gap of growing prevalence of glaucoma and challenges for access to healthcare services. Tele-ophthalmology is being developed to close this gap. We have characterized a large retinal fundus dataset in order to develop an automated computer system to screen for glaucomatous optic neuropathy.

Methods: A de-identified dataset of **r**etinal fundus **i**mages for **g**laucoma **a**nalysis (RIGA) was derived from three sources. The optic cup and disc boundaries of these images were marked and annotated manually by six experienced ophthalmologists individually using a tablet and a precise pen. Six parameters were extracted and assessed among the ophthalmologists. The inter-observer annotations were compared by calculating the standard deviation (SD) for every image between the six ophthalmologists in order to determine if there are any outliers among the six annotations to be eliminated i.e. filtering the images.

File Inventory: The dataset includes 3 different files: 1) MESSIDOR dataset file contains 460 original images and 460 images for every single ophthalmologist manual marking in total of 3220 images for the entire file. 2) Bin Rushed Ophthalmic center file and contains 195 original images and 195 images for every single ophthalmologist manual marking in total of 1365 images for the entire file. 3) Magrabi Eye center file and contains 95 original images and 95 images for every single ophthalmologist manual marking in total of 665 images for the entire file. The total of all the dataset images are 750 original images and 4500 manual marked images. The images are saved in JPG and TIFF format

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Keyword: Glaucoma, fundus images, optic nerve head, optic disc, optic cup, automated glaucoma screening system, image segmentation, image processing, medical imaging,

Use and Access
The dataset can be used, free of charge, for research and educational purposes. Copy, redistribution, and any unauthorized commercial use are prohibited. Any researcher reporting results that use this dataset must acknowledge the MESSIDOR program, Magrabi Eye Center in Saudi Arabia and Bin Rushed Ophthalmic center in Saudi Aribia.

Users of the RIGA dataset must cite the following paper:

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For more information about the data analysis check out this paper:

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